

Serial No.: 10/051,666

Amendment Dated: March 4, 2004

Reply to Office Action of September 16, 2003

**Remarks**

As an initial matter, Applicant confirms the election made during the telephonic conference with the Examiner on September 10, 2003, electing to pursue the claims of Group 1, claims 1 – 10 and 23 – 31, drawn to an integrated metal processing facility. Claims 11 – 22 have now been canceled as reflected above.

Claims 1 – 3 have been rejected under 35 USC § 102(a) as being anticipated by *Pollkoetter*. The rejection states that *Pollkoetter* teaches a metal processing facility including a pouring station, heat treatment unit, and an intermediate transfer system including a heat source (54) including heating elements for maintaining castings at a "process temperature," as well as a mechanized arm 55 for transferring the castings from the pouring stations to the heat treatment station. Applicant respectfully requests reconsideration.

Applicant notes that at column 4, lines 23 – 25, *Pollkoetter* states:

"On the way to the flow-forming station, the conveyor belt 51 passes through a tunnel-like heating furnace 54. The heating furnace can heat the pre-form 11 from its elevated temperature, immediately after casting, to a desired flow-forming temperature.

The heated pre-form 11 is removed, by means of a handling device 55, from the conveyor belt 51, and is supplied to one of the two flow-forming machines 52, 53." (emphasis added)

*Pollkoetter* states further on in column 4, that the heat treatment station for solution heat treatment, "can be provided at the conveyor belt 56 along side the downstream buffer section 57." [see Fig. 4; Col. 4, ll. 32 – 35]. Thus, the "heat source" (54) referenced to in the Official Action does not function as the heat source of the claimed invention. In the claimed invention, the "heat source" is positioned to apply heat to the castings prior to introduction of the castings into the heat treatment station to enable the castings as they are moved from pouring station to heat

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treatment unit to solidify for heat treatment while still maintaining the castings at or above a process control temperature for the metal of the castings.

The purpose of the *Pollkoetter* reference, however, appears to be directed to the combination of casting and forging methods for forming metal castings, primarily one-part vehicle wheels with a hub and rim, in which the "pre-form" is initially formed by casting, and then is heated to a point where the metal has become softened (i.e., heated to an elevated "flow-forming temperature") for forging. At this point, the pre-form is then directed into one of two flow-forming machines 52 and 53 for forming a shaped "intermediate form 21", which is thereafter removed from one of the flow-forming machines 52 or 53 with a handling device 55. It is only after this material forming or shaping of the pre-form casting 11 has been performed by the flow-forming machines 52, 53, that a heat treatment apparently can be conducted. [See Col. 4, ll. 32 – 35]. There is no teaching or even suggestion that once the workpiece leaves the flow-forming machine 52, 53 of *Pollkoetter* that the workpiece will be maintained at or above any mentioned temperature until it is introduced into the heat treatment station.

Likewise, in contrast to the casting process of the present invention, there is no mention of castings being maintained at or above a "process control temperature" for the particular metal of the casting, until the castings are introduced into the heat treatment station. The "process control temperature" for the metal of the particular casting, as called for in the claim, is that temperature below which the amount of heat and time required to raise the solidified castings back to their heat treatment temperature is exponentially increased. According to the invention, the temperature of the metal/casting is maintained at temperatures (at or above the process control temperature) which will allow the subject casting to cool enough to solidify while at the same time prevent the temperature of the casting from falling so low that the time and heat required to both raise the castings back up to a heat treatment temperature and to perform a heat

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treatment thereon is not significantly increased. These temperatures are maintained until the castings are introduced into a heat treatment station.

At this point, Applicants have amended claim 23 to further clarify the present invention regarding the control of temperature of a casting at or above a process control temperature for the metal of the casting to allow for solidification while at the same time arresting cooling as it is transferred between a pouring station and a heat treatment line or station. Such a construction of an integrated metal processing facility and system is not believed to be taught by, and thus is not anticipated by the cited art of record. Accordingly, it is respectfully submitted that claims 1 – 3 are not anticipated by *Pollkoetter* under 35 USC § 102(a), and accordingly, it is respectfully requested that this rejection be withdrawn.

Claims 4 – 10 and 23 – 31 have been rejected under 35 USC § 103(a) as being unpatentable over *Pollkoetter* in view of the ASM Handbook, Vol. 4, as applied to claims 1 – 3 above. The rejection states that because *Pollkoetter* requires the use of some unspecified type of heat treating furnace, a motivation to employ any of known equivalent heat treating furnace arrangements disclosed by the ASM Handbook, including those with pre-heating or process temperature control chambers, would have been an obvious modification to one of ordinary skill in the art. Applicant respectfully requests reconsideration.

As discussed above, *Pollkoetter* appears to be directed to a system for shaping and flow-forming (i.e., forging) pre-form articles and thus is not directed toward attempting to control the temperature of a cast article at or above a process control temperature for the metal of the cast article as taught by the claims. *Pollkoetter* instead tries to significantly raise the temperature of the pre-form article to an elevated temperature at which the metal of the pre-form becomes softened so that it can be formed or shaped by "flow-forming machines." In contrast, the ASM Handbook is simply a general description of various types of heat treating equipment and likewise does not address or disclose a system for applying heat to castings as they are being

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transferred from a pouring/casting station to a heat treatment line or station in order to maintain the castings at or above their process control temperature, at which temperature the castings are permitted to solidify, but can readily and quickly be raised to a heat treatment temperature upon introduction into the heat treatment station in order to provide a much faster and more efficient heat treatment of such cast materials. Such a system is not addressed alone or in combination by *Pollkoetter* and/or the ASM Handbook Vol. 4. It is further respectfully submitted that there is no suggestion or motivation found in either of these references to try to combine their teachings in an effort to try to form the claimed invention. In fact, *Pollkoetter* appears to teach heating the pre-form to a significantly elevated temperature in order to soften and bring the metal of the pre-form close to a flowable, semi-liquid state to enable flow-forming thereof by the flow-forming machines 52 and 53.

Accordingly, it is respectfully submitted that there is no motivation or suggestion to combine the cited references, and even if such a combination were made, it still would not be sufficient to define the structure and operation of the claimed invention as set forth in claims 4 – 10 and 23 – 31. It is therefore respectfully submitted that claims 4 – 10 and 23 – 31 are not obvious under 35 USC § 103(a) and thus are patentable over *Pollkoetter* in view of the ASM Handbook Vol. 4. It is respectfully requested that this rejection accordingly be withdrawn.

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In summary, Applicant respectfully submits that claims 1 – 10 and 23 – 31 as presently pending in this application define an integrated metal processing facility or system for forming and heat treating metal castings that provides a distinct advance in the art that is not taught or suggested by the prior art of record. An early notice of allowance accordingly is solicited. Should the Examiner have any questions regarding the foregoing amendment, he is invited and urged to telephone the undersigned attorney.

Respectfully submitted,



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Date: March 4, 2004

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**Customer Id No.:**

Docket No: C152-1150